

ABSTRACT OF THE DISCLOSURE

A method is disclosed for growing high-quality low-defect crystal films heteroepitaxially on substrates that are different than the crystal films. The growth of the
5 first two heteroepitaxial bilayers is performed on a first two-dimensional nucleate island before a second growth of two-dimensional nucleation is allowed to start. The method is particularly suited for the growth of 3C-SiC, 2H-AlN, or 2H-GaN on 6H-SiC, 4H-SiC, or silicon substrates.